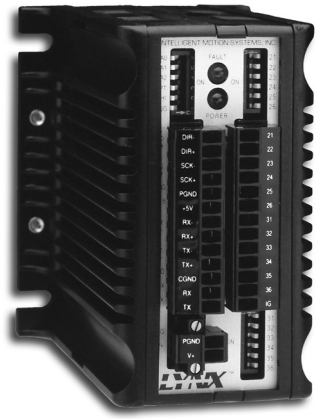
LYNX™

HIGH PERFORMANCE MACHINE/PROCESS CONTROLLER



FEATURES

- Very Low Cost
- Small Size (1.45x1.75x4.0 inches) (37x45x102 mm)
- Din Rail or Panel Mount
- Wide Input Voltage Range +12 to +75 VDC, or +5 VDC
- Capable of Controlling up to 3 Axis Sequentially
- Electronic Gearing*
- Open or Closed Loop Control*
- Interfaces with Stepper or Digital Servo Drives
- Motion Values Scalable to User Unit
- Twelve +5 to +24 VDC Isolated I/O Lines (Expandable to 24) – User Definable as Dedicated or General Purpose I/O
- Programmable Digital Filtering for Inputs
- 32 Bit Floating Point Math, Logic and Conditional Functions
- 7 Hardware and 62 Software Addresses for Multi-Drop Communications
- Isolated Independent RS-232 and RS-485 Standard with Selectable BAUD Rate to 38.4K, Full or Half Duplex
- Step/Direction, Up/Down, Quadrature Clock I/O Types
- 0 to 5 MHz Step Clock Rate, Selectable in 0.005 Hz Increments
- 4 Pre-Defined and 1 User Definable Acceleration/Deceleration Curves
- Easy to Wire Removable Terminal Strips

*Requires Combination Control or Differential I/O Module.

DESCRIPTION

The LYNX Controller is a low cost, compact and versatile machine and process controller designed to be used with stepper and digital servo drives. The functionality of the LYNX may be easily increased with optional expansion modules, which simply plug onto and are powered by the Controller.

The LYNX is powered by either drive power (+12 to +75 VDC) or in a standalone power configuration using +5 VDC. Communications is via either RS-232 or RS-485 and may be directed to up to 62 addresses for multi-drop systems. The system can be panel mounted using the end plates provided, or DIN rail mounted with the use of optional mounting brackets.

The LYNX is programmed using a versatile and easy to learn programming language. This language, in addition to a powerful set of motion commands and parameters, contains a comprehensive set of math and logic functions, 13 program trip functions as well as 25 predefined I/O functions. The Basic-like structure of the program allows the user to easily create powerful machine control programs and store them in a generous 8k bytes of user storage space.

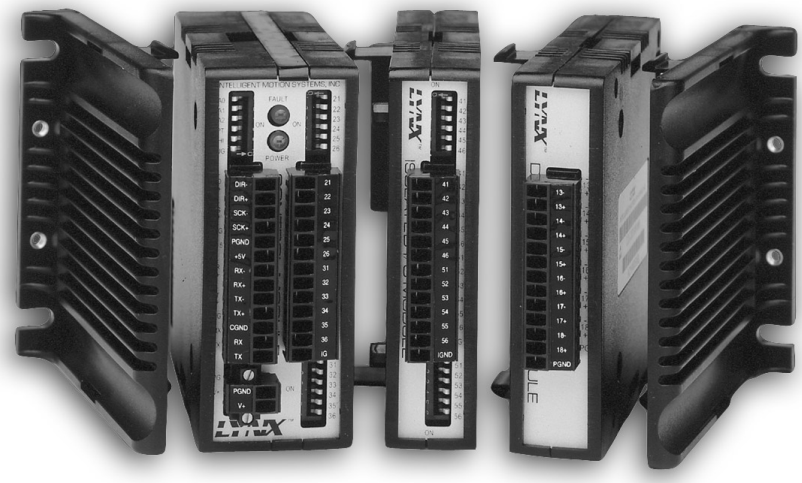
There are two basic models of the LYNX Controller: the LYNX Control Module and the LYNX Combination Control Module.

The standard LYNX Control Module comes equipped with 12 points of +5 to + 24 VDC Isolated Digital I/O in two groups of 6 points each. These points may be individually programmed to a pre-defined or general purpose function. The I/O may also be used as a group to read or write BCD (Binary Coded Decimal). This I/O set may be expanded to 24 points by use of the optional Isolated Digital I/O Module.

If closed loop control or the need to control a secondary or tertiary axis (either sequentially or electronically geared to the primary axis) is required, the optional High Speed Differential I/O Module may be added to the system.

The LYNX Combination Control Module comes equipped with one group (6 points) of isolated digital I/O. These may be expanded to three groups (18 points) by using the Isolated Digital I/O Module. The Combination Control Module also comes with three channels of high speed differential I/O. This allows the use of encoder feedback or controlling a secondary axis without adding the High Speed I/O Module.

The LYNX's innovative design places a powerful machine control solution geared to today's size and price sensitive market in the hands of OEMs.



LYNX System: Controller, Isolated and Differential Modules shown with end plates.

GENERAL SPECIFICATIONS

ELECTRICAL

Power Supply

Input Voltage	+12 to +75 VDC, or +5 VDC
Output Voltage*	+5 VDC current limited to 150mA
Input Current	84.5 to 250 mA (dependent on number and type of accessories and input voltage used)

*Only available with +12 to +75 VDC input.

General Purpose I/O

Number of I/O	12 (6 with Combination Controller)
Input Voltage	+5 to +24 VDC
Output Current Sink	350 mA
Input Filter Range	215Hz to 21.5kHz (programmable)
Pull-ups	7.5 k ohm individually switchable
Pull-up Voltage	+5 VDC on-board
Protection	Over Temp, Short Circuit, Inductive Clamp
Isolated Ground	Common to 12 I/O

COMMUNICATION

Asynchronous

Interface Type	COMM 1: RS-232 COMM 2: RS-485
# of Bits/Character	8
Parity	none
Handshake	none
Baud Rate	4.8 to 38.4kbps selectable
Error Checking	16 bit check sum (binary mode)

ASCII Text or Binary Communication Modes

Isolated Ground	Common to COMM1 and COMM2

MOTION

Counters

Type	Position, Encoder #1, Encoder #2: 32 Bits
Edge Rate (Max)	5 MHz

Electronic Gearing†

Range*	External Clock In: -1 to 1
Resolution	32 Bits
Range*	Secondary Clock Out: -2 to 2
Resolution	16 Bits

† Requires the High Speed Differential I/O Module or Combination Controller.
*Adjusting the microstep resolution of the drive can increase the range.

Velocity

Range	±5,000,000 steps/sec
Resolution	0.005 steps/sec
Update Period	25.6 Microseconds

Acceleration/Deceleration

Range	±1,530,000,000 steps/sec^2
Resolution	0.711 steps/sec^2
Types	Linear, triangle s-curve, parabolic, sinusoidal s-curve, user defined

SOFTWARE

User Program Space	8175 Bytes
Number of User Definable Labels, Variables and Flags	291
Program and Data Storage	Flash
Math, Logic and Conditional (32 Bit Floating Point Math Functions IEEE Format)	Add, Subtract, Multiply, Divide, Sine, Cosine, Tangent, Arc Sine, Arc Cosine, Arc Tangent, AND, OR, XOR, NOT, Less Than, Greater Than, Equal, Square Root, Absolute, Integer Part, Fractional Part
Acceleration & Deceleration	Separate Variables and Flags – 4 Pre-Defined Types and 1 User Defined
Limit Switch	Definable: Deceleration and Type
Isolated I/O Line	Software Selectable as Dedicated or General Purpose
Predefined I/O Functions	25 (Limit, Home, etc.)
Program Trip Functions	13 – 4 I/O Input Trips, 4 Timer Trips, 4 Position Trips, 1 Velocity Trip
User Programs	2 Executed Simultaneously – 1 Foreground, 1 Background
Party Mode Names	62
Communication Modes	2 – ASCII, Binary
Mechanical Compensation	Backlash
Encoder Functions	Stall Detection and Position Maintenance

ENVIRONMENTAL

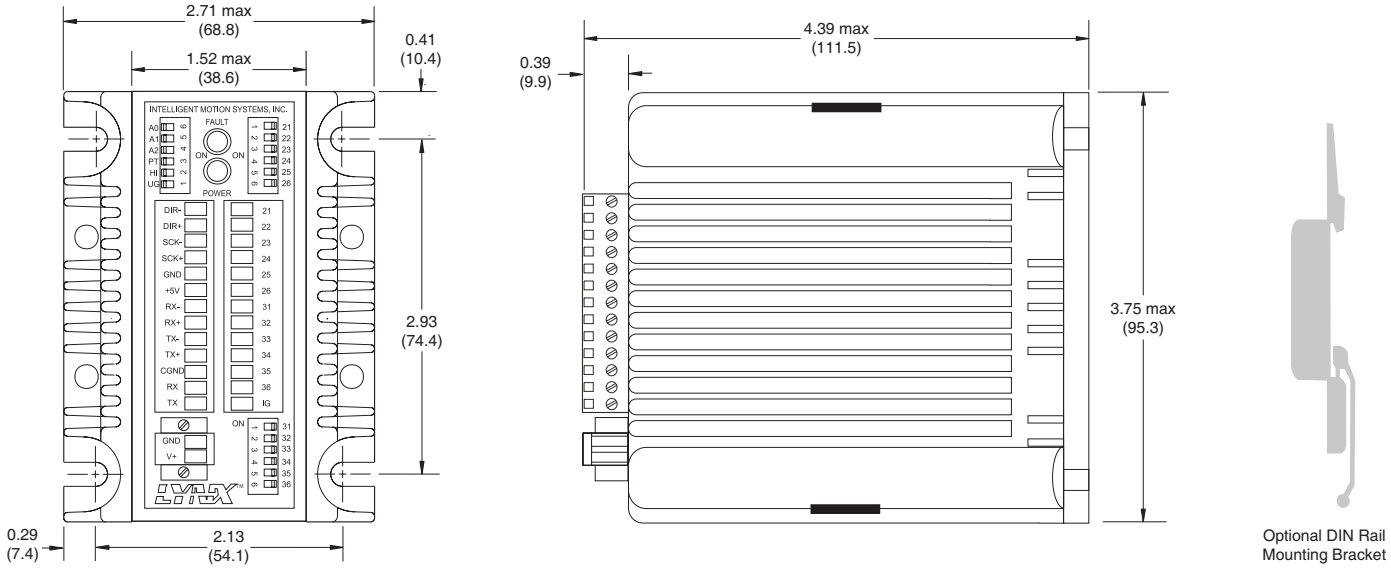
Operating Temperature	0 to 50° C
Storage Temperature	–20 to 70° C
Humidity	0 to 90% non-condensing

MECHANICAL

Dimensions	(see Mechanical Specs)
Mounting	4–#6 (or M3.5) machine screws
Mounting Screw Torque	5.0 to 7.0 lb-in

MECHANICAL SPECIFICATIONS

Dimensions in Inches (mm)



SWITCHES

CONTROLLER SETUP (SW1)

6 Position DIP

SWITCH	FUNCTION
1	Firmware Upgrade
2	Host Mode Select
3	Party Mode Select
4–6	Multidrop Address

I/O PULLUP (SW2)

SWITCH	FUNCTION	
	LX-CM100	LX-CM200
1–6	I/O Group 20	—

I/O PULLUP (SW3)

SWITCH	FUNCTION	
	LX-CM100	LX-CM200
1–6	I/O Group 20	—

CONNECTORS

POWER (P1)

2 Position Removable Terminal Block

PIN	FUNCTION
1	Power Ground
2	+12 to +75 VDC Input

DRIVE & COMMUNICATIONS (P2)

13 Position Removable Terminal Block

PIN	FUNCTION
1	Direction –
2	Direction +
3	Step Clock –
4	Step Clock +
5*	Ground*
6†	+5 VDC† (Input/Output)
7	RS-485 RX –
8	RS-485 RX +
9	RS-485 TX –
10	RS-485 TX +
11	Communication Ground
12	RS-232 RX
13	RS-232 TX

*Referenced to Power Ground.
†Output when using +12 to +75 VDC Input.

DIGITAL I/O (P3)

13 Position Removable Terminal Block

PIN	FUNCTION	
	LX-CM100	LX-CM200
1	I/O Line 21	Channel A–
2	I/O Line 22	Channel A+
3	I/O Line 23	Channel B–
4	I/O Line 24	Channel B+
5	I/O Line 25	Channel C–
6	I/O Line 26	Channel C+
7	I/O Line 31	I/O Line 21
8	I/O Line 32	I/O Line 22
9	I/O Line 33	I/O Line 23
10	I/O Line 34	I/O Line 24
11	I/O Line 35	I/O Line 25
12	I/O Line 36	I/O Line 26
13	Isolated Ground (I/O)	

EXPANSION MODULES

The LYNX Control Module and the LYNX Combination Control Module can be used as standalone controllers or combined with other LYNX modules to expand system capabilities to include more complex control.

The flexible building-block design of the LYNX lets you create, change and expand a system to suit your specific needs. Easy-to-connect, plug-on expansion modules include the High Speed Differential I/O Module and the Isolated Digital I/O Module. Accessory options are also available.

No additional hardware is required. Modules simply plug in and snap into place making even field change quick and easy.

ORDER INFORMATION

LYNX MOTION CONTROLLERS

TYPE	*DESCRIPTION*	*PART NUMBER*
Control Module	[12] +5 to +24 VDC Isolated Digital I/O RS-232 and RS-485 Communications	LX-CM100-000*
Combination Control Module	[6] +5 to +24 VDC Isolated Digital I/O [3] High Speed I/O Channels (Differential or Single-ended) RS-232 and RS-485 Communications	LX-CM200-000†

*Control Module may be used in conjunction with all expansion modules.
†Combination Control Module may be used with all expansion modules except the High Speed Differential I/O Module.

EXPANSION MODULES

TYPE	*DESCRIPTION*	*PART NUMBER*
High Speed Differential I/O Module	[6] Channels High Speed Differential (or Single-ended) I/O. May be used for Closed Loop Control, Electronic Gearing or General Purpose.	LX-DD100-000
Isolated Digital I/O Module	[12] Points of Programmable Isolated I/O. May be Configured for 8 Dedicated Input Functions, 7 Dedicated Output Functions or General Purpose. May also be used to Read/Write BCD.	LX-DI100-000

ACCESSORIES

TYPE	*DESCRIPTION*	*PART NUMBER*
2 Pin Connector	2 Pin Locking Type Screw Terminal Connector	LX-CN002
13 Pin Connector	13 Pin Locking Type Screw Terminal Connector	LX-CN013
Din Rail Mounting Brackets	Mounting Bracket Kit to Convert LYNX Systems to DIN Rail Mount	LX-DB100-000
Human/Machine Interface (HMI)	Programmable User Interface with 20 x 4 Character Display, 6 Function Keys, Numeric Key Pad, 4k Bytes User Storage	LX-HI100-000